

Roundnose grenadier (*Coryphaenoides rupestris*) in Division 3.a (Skagerrak and Kattegat)

ICES stock advice

ICES advises that when the precautionary approach is applied, there should be zero catch in each of the years 2019 and 2020.

Stock development over time

Landings varied between 1000 and 2000 tonnes in the 1990s and peaked in 2005. Landings and discards after 2006 are very small. The biomass index has been low since 2010.

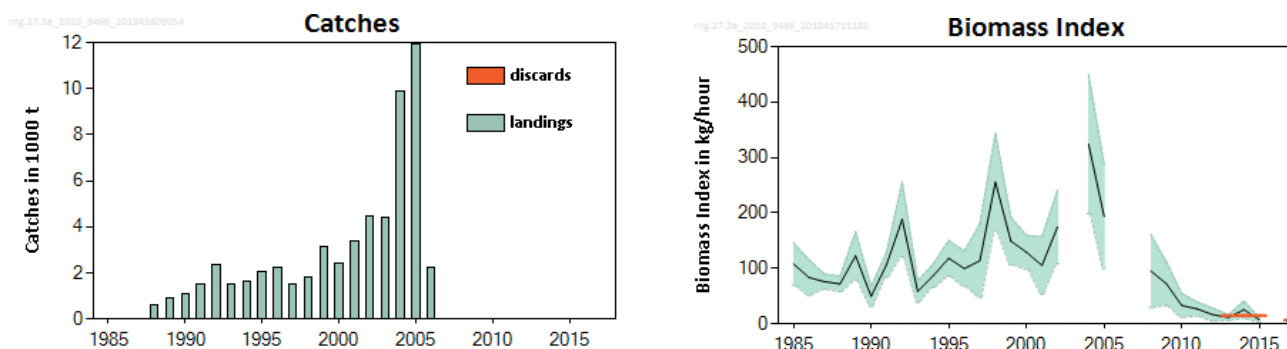


Figure 1 Roundnose grenadier in Division 3.a. ICES landings and discards in thousand tonnes. Average standardized biomass index. The orange horizontal lines indicate the average biomass indicator of the respective year range (last two and preceding three years) used to calculate the advice

Stock and exploitation status

ICES cannot assess the stock and exploitation status relative to MSY and PA reference points because the reference points are undefined.

Table 1 Roundnose grenadier in Division 3.a. State of the stock and fishery relative to reference points.

		Fishing pressure			Stock size					
		2015	2016	2017	2015	2016	2017			
Maximum sustainable yield	F_{MSY}	?	?	?	Unknown	$MSY B_{trigger}$?	?	?	Undefined
Precautionary approach	F_{pa}, F_{lim}	?	?	?	Unknown	B_{pa}, B_{lim}	?	?	?	Undefined
Management plan	F_{MGT}	—	—	—	Not applicable	B_{MGT}	—	—	—	Not applicable
Qualitative evaluation	-	?	?	?	Unknown	-	⊗	⊗	⊗	Very low

Catch scenarios

ICES framework for category 3 stocks (ICES, 2012) was applied. The Norwegian shrimp survey (No-shrimp-Q1) was used as the index of stock development. The advice is based on a comparison of the two latest values (index A, 2016 missing) with the three preceding values (index B), multiplied by the recent advised catch. The index is estimated to have decreased by more than 20% and thus the uncertainty cap was applied. Fishing mortality is unknown and stock size is considered to be very low; consequently, the precautionary buffer was applied. Discarding rate is 70% of total catch.

Table 2 Roundnose grenadier in Division 3.a. The basis for the catch options.*

Index A (2016–2017; 2016 missing)		6.64 kg h ⁻¹
Index B (2013–2015)		14.8 kg h ⁻¹
Index ratio (A/B)		0.45
Uncertainty cap	Applied	0.8
Advised catches for 2017 and 2018, issued in 2016		0 tonnes
Discard rate		0.70
Precautionary buffer	Applied	0.8
Catch advice**		0 tonnes
% Advice change***		0%

*The figures in the table are rounded. Calculations were done with unrounded inputs and computed values may not match exactly when calculated using the rounded figures in the table.

** [Advice for 2017–2018] × [uncertainty cap] × [precautionary buffer].

***Advice value for 2019 relative to advice value for 2018.

Basis of the advice

Table 3 Roundnose grenadier in Division 3.a. The basis of the advice.

Advice basis	Precautionary approach.
Management plan	ICES is not aware of any agreed precautionary management plan for roundnose grenadier in this area.

Quality of the assessment

Advice has previously been provided based on ICES framework for category 6 stocks. The biomass index from the Norwegian shrimp survey, derived from the relevant depth range of the species in this area (deeper than 300 m) is considered a representative survey for the stock. As a result, the current advice is provided based on ICES framework for category 3 stocks. For the surveys conducted in 1984, 2003, 2006, and 2007, only a single or no trawl hauls were made deeper than 400 m; thus, the main depth range was not sampled for those years. The 2016 data from the shrimp survey are regarded as unreliable due to inconsistencies with the trawling gear. Data from these years are excluded.

Issues relevant for the advice

Large increases in landings in the early 2000s, up to 12 000 tonnes, are considered to have been unsustainable, given the vulnerability of a species with high longevity and late maturity. In addition, the fishery has a small geographical extent (in one ICES rectangle alone) that might result in local depletion. The increases appear to have been supported by a single exceptional recruitment event in the early 1990s. Catches in recent years have been mostly bycatch in the shrimp fishery and have declined to low levels, probably partly driven by the introduction of sorting grids in the shrimp fishery. Bycatches of roundnose grenadier are both landed and discarded.

Reference points

No reference points are defined for this stock.

Basis of the assessment

Table 4 Roundnose grenadier in Division 3.a .The basis of the assessment.

ICES stock data category	3 (ICES, 2016).
Assessment type	Survey trend-based assessment (ICES, 2018).
Input data	Catches and Norwegian shrimp survey index on roundnose grenadier.
Discards and bycatch	Discards are included in the assessment.
Indicators	None.
Other information	None.
Working group	Working Group on the Biology and Assessment of Deep-Sea Fisheries Resources (WGDEEP)

Information from stakeholders

There is no additional available information.

History of the advice, catch, and management

Table 5 Roundnose grenadier in Division 3.a. History of ICES advice, the agreed TAC, and ICES landings. Weights are in tonnes.

Year	ICES advice	Predicted catch corresp. to advice	EU TAC Subarea 3	Norway TAC Subarea 3	ICES landings Division 3.a
2003	Significant reduction in effort	-	1870	no TAC	4300
2004	Biennial	-		no TAC	9900
2005	Fishery not allowed to expand, unless proven to be sustainable	-	1590	no TAC	11900
2006	Biennial	-	1590	2700	2300
2007	50% reduction of effort compared to the level before the fishery expanded (1991–1999)	1000	850**	no TAC	1*
2008	Biennial	1000	850	no TAC	+
2009	Constrain catches to the catches level before the expansion of the fishery (1988–1991)	1000	850	no TAC	2
2010	Biennial	1000	850	no TAC	1
2011	Same advice as previously	1000	850	no TAC	0
2012	No new advice, same as 2011		850	no TAC	1
2013	Catch should not increase unless there is evidence that this will be sustainable	< 1	680	no TAC	1
2014	No new advice, same as 2013	< 1	544	no TAC	1
2015	No targeted fishery and minimize bycatch	0	435	no TAC	1
2016	No new advice, same as 2015	0	348	no TAC	1
2017	Precautionary approach (same value as advised catches for 2016)	0	278	no TAC	1
2018	Precautionary approach (same value as advised catches for 2017)	0	223	no TAC	
2019	Precautionary approach	0			
2020	Precautionary approach	0			

* From this year bycatch only.

** Directed fisheries prohibited since mid-2006 through an agreement between EU and Norway.

+ indicates landings less than 100 kg.

History of catch and landings

Table 6 Roundnose grenadier in Division 3.a. Catch distribution by fleet in 2017 as officially submitted to ICES. Weights in tonnes.

Total catch (2017)	Commercial landings	Commercial discards
2.3	Bycatch shrimp trawl fisheries	1.6
	0.7	

Table 7 Roundnose grenadier in Division 3.a. History of official landings and discards presented by each country participating in the fishery. Weights are in tonnes.

Year	Denmark	Norway	Sweden	Total	Total discards
1988	612		5	617	
1989	884		1	885	
1990	785	280	2	1067	
1991	1214	304	10	1528	
1992	1362	211	755	2328	
1993	1455	55		1510	
1994	1591		42	1633	
1995	2080		1	2081	
1996	2213			2213	
1997	1356	124	42	1522	
1998	1490	329		1819	
1999	3113	13		3126	
2000	2400	4		2404	
2001	3067	35	258	3360	
2002	4196	24	262	4482	
2003	4302		82	4384	
2004	9874	16		9890	
2005	11922		1	11923	
2006	2261	4		2265	
2007	+	1		1	
2008	+	+		0	
2009	2	+	+	2	
2010	1	0		1	
2011		0		0	
2012	1	0		1	
2013	1			1	
2014	0.6	0	0.4	1	0.4
2015	0.6	+	+	0.6	1
2016	1.1	0.3		1.4	1
2017	0.7	+		0.7	1.6

+ indicates landings less than 100 kg.

Summary of the assessment

Table 8 Roundnose grenadier in Division 3.a. Assessment summary. Biomass index from the Norwegian shrimp survey for roundnose grenadier. Biomass index in kg h⁻¹ and standard errors (SE).

Year	Biomass index (kg h ⁻¹)	High	Low
1985	108.119	146.441	69.797
1986	83.749	115.909	51.589
1987	76.154	89.719	62.59
1988	72.135	86.053	58.218
1989	122.686	166.165	79.207
1990	49.809	68.011	31.607
1991	107.14	129.41	84.87
1992	188.544	256.071	121.017
1993	58.592	78.011	39.173
1994	87.194	108.4	65.989
1995	118.299	150.66	85.937
1996	99.63	131.311	67.95
1997	113.858	180.332	47.384
1998	255.54	343.343	167.736
1999	149.297	192.145	106.448
2000	129.268	159.661	98.875
2001	105.328	157.172	53.485
2002	174.768	241.035	108.501
2003			
2004	324.38	449.861	198.899
2005	193.653	287.462	99.844
2006			
2007			
2008	95.578	161.384	29.771
2009	72.719	112.533	32.905
2010	33.24	54.709	11.771
2011	26.838	39.45	14.226
2012	16.692	28.664	4.721
2013	11.482	16.403	6.562
2014	25.624	41.387	9.861
2015	7.278	11.87	2.685
2016			
2017	6.639	9.05	4.228

Sources and references

ICES. 2012. ICES Implementation of Advice for Data-limited Stocks in 2012 in its 2012 Advice. ICES CM 2012/ACOM:68. 42 pp.

ICES. 2016. Advice basis. *In* Report of the ICES Advisory Committee, 2016. ICES Advice 2016, Book 1, Section 1.2.

ICES. 2018. Report of the Working Group on the Biology and Assessment of Deep-sea Fisheries Resources (WGDEEP), 11–18 April 2018, ICES HQ, Copenhagen, Denmark. ICES CM 2018/ACOM:14. 624 pp.